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WHAT IS CLAIMED IS:

1. An image processing apparatus comprising:

an input section configured to be input image data having gradation information of at least 2-bits per pixel;

a detecting section configured to detect an abnormality in the gradation information of the image data input to the input section;

an announcing section configured to announce the detection of the abnormality in a case where the abnormality is detected by the detecting section;

a binarizing section configured to binarize the gradation information of the image data into 1-bit per pixel; and

an output section configured to output the image data binarized by the binarizing section.

2. The image processing apparatus as claimed in claim 1, wherein the gradation information of each pixels are sequentially input to the detecting section,

wherein the detecting section comprises:

a minimum value storing unit configured to store a minimum value of the gradation information; and

a minimum value comparing unit configured to compare the minimum value of the gradation information so far being input and stored in the minimum value storing unit and a value of the gradation information that is next input, and to set the smaller one into the minimum value storing unit as a new minimum value,

and

wherein the detecting section detects the abnormality of the gradation information based on the minimum value stored in the minimum value storing unit.

3. The image processing apparatus as claimed in claim 2, wherein the detecting section further comprises a detecting unit configured: to compare the minimum value stored in the minimum value storing unit with a first threshold value in which to be used for determining whether all of the input image data are uniform in graduation; and to detect the abnormality that all of the input image data are uniform in graduation in a case where the minimum value is larger than the first threshold value.

4. The image processing apparatus as claimed in claim 3, wherein the detecting unit detects the abnormality that all of the input image data are data indicating white in a case where the minimum value is larger than the first threshold value.

5. The image processing apparatus as claimed in claim 3, wherein the detecting unit detects the abnormality that all of the input image data are data indicating black in a case where the minimum value is larger than the first threshold value.

6. The image processing apparatus as claimed in claim 3 further comprising a threshold value changing unit configured to set the first threshold value to arbitrary value.

7. The image processing apparatus as claimed in claim 6, wherein the threshold value changing unit sets the first

threshold value based on the gradation information of input image data containing no image.

8. The image processing apparatus as claimed in claim 1, wherein the gradation information of each pixels are sequentially input to the detecting section,

wherein the detecting section comprises:

a maximum value storing unit configured to store a maximum value of the gradation information; and

a maximum value comparing unit configured to compare the maximum value of the gradation information so far being input and stored in the maximum value storing unit and a value of the gradation information that is next input, and to set the larger one into the maximum value storing unit as a new maximum value, and

wherein the detecting section detects the abnormality of the gradation information based on the maximum value stored in the maximum value storing unit.

9. The image processing apparatus as claimed in claim8, wherein the detecting section further comprises a detecting unit configured: to compare the maximum value stored in the maximum value storing unit with a second threshold value in which to be used for determining whether all of the input image data are uniform in graduation; and to detect the abnormality that all of the input image data are uniform in graduation in a case where the maximum value is smaller than the second threshold value.

10. The image processing apparatus as claimed in claim 9, wherein the detecting unit detects the abnormality that all of the input image data are data indicating white in a case where the maximum value is smaller than the second threshold value.

11. The image processing apparatus as claimed in claim 9, wherein the detecting unit detects the abnormality that all of the input image data are data indicating black in a case where the maximum value is smaller than the second threshold value.

12. The image processing apparatus as claimed in claim 9 further comprising a threshold value changing unit configured to set the second threshold value to arbitrary value.

13. The image processing apparatus as claimed in claim12, wherein the threshold value changing unit sets the second threshold value based on the gradation information of input image data containing no image.

14. The image processing apparatus as claimed in claim 1, wherein the gradation information of each pixels are sequentially input to the detecting section,

wherein the detecting section comprises:

a minimum value storing unit configured to store a minimum value of the gradation information;

a maximum value storing unit configured to store a maximum value of the gradation information;

a minimum value comparing unit configured to compare the minimum value of the gradation information so far being input

and stored in the minimum value storing unit and a value of the gradation information that is next input, and to set the smaller one into the minimum value storing unit as a new minimum value; and

a maximum value comparing unit configured to compare the maximum value of the gradation information so far being input and stored in the maximum value storing unit and a value of the gradation information that is next input, and to set the larger one into the maximum value storing unit as a new maximum value, and

wherein the detecting section detects the abnormality of the gradation information based on the minimum value stored in the minimum value storing unit and the maximum value stored in the maximum value storing unit.

15. The image processing apparatus as claimed in claim 14, wherein the detecting section further comprises a detecting unit configured:

to compare the minimum value stored in the minimum value storing unit with a first threshold value in which to be used for determining whether all of the input image data are uniform in graduation;

to detect the abnormality that all of the input image data are uniform in graduation in a case where the minimum value is larger than the first threshold value;

to compare the maximum value stored in the maximum value

storing unit with a second threshold value in which smaller than the first threshold value and to be used for determining whether all of the input image data are uniform in graduation; and

to detect the abnormality that all of the input image data are uniform in graduation in a case where the maximum value is smaller than the second threshold value.

16. The image processing apparatus as claimed in claim 15, wherein the detecting unit detects the abnormality that all of the input image data are data indicating white in a case where the minimum value is larger than the first threshold value, and detects the abnormality that all of the input image data are data indicating black in a case where the maximum value is smaller than the second threshold value.

17. The image processing apparatus as claimed in claim 15, wherein the detecting unit detects the abnormality that all of the input image data are data indicating black in a case where the minimum value is larger than the first threshold value, and detects the abnormality that all of the input image data are data indicating white in a case where the maximum value is smaller than the second threshold value.

18. The image processing apparatus as claimed in claim 15 further comprising a threshold value changing unit configured to set the first and the second threshold value to arbitrary values.

19. The image processing apparatus as claimed in claim 18,

wherein the threshold value changing unit sets the first and second threshold values based on the gradation information of input image data containing no image.

20. The image processing apparatus as claimed in claim 18, wherein in a case where the minimum value stored in the minimum value storing unit is smaller than the first threshold value and the maximum value stored in the maximum value storing unit is larger than the second threshold value when a prescribed amount of the image data as measured from a head of the image data has been input, the threshold value changing unit sets the first threshold value to be smaller than the maximum value stored in the maximum value stored in the maximum value storing unit.

21. The image processing apparatus as claimed in claim 14, wherein the detecting section further comprises an amplitude determining unit configured:

to compare a difference between the maximum value stored in the maximum value storing unit and the minimum value stored in the minimum value storing unit with an amplitude determining value in which to be used for determining whether a gradation difference of the image data is larger than a prescribed value; and

to detect the abnormality by determining that the image data have no gradation difference in a case where the difference is smaller than the amplitude determination value.

22. The image processing apparatus as claimed in claim 15,

wherein the detecting section further comprises:

an amplitude determining unit configured: to compare a difference between the maximum value stored in the maximum value storing unit and the minimum value stored in the minimum value storing unit with an amplitude determining value in which to be used for determining whether a gradation difference of the image data is larger than a prescribed value; and to detect the abnormality by determining that the image data have no gradation difference in a case where the difference is smaller than the amplitude determination value; and

a mode switching unit configured to switch between a first determination mode in which the abnormality is detected by the detection of the detecting unit, and a second determination mode in which the abnormality is detected by the detection of the amplitude determining unit.

23. The image processing apparatus as claimed in claim 22 further comprising a scanning section configured to scan an original and generate the image data to be input to the input section.

24. The image processing apparatus as claimed in claim 23 further comprising:

a designating section configured to designate whether the original to be scanned by the scanning section is a photograph or not; and

a control section configured to control the mode switching

unit to switch to the second determination mode in a case where the original is designated to be a photograph, and to control the mode switching unit to switch to the first determination mode in a case where the original is not designated to be a photograph.

25. The image processing apparatus as claimed in claim 24, wherein the scanning section comprises a CCD image sensor or a contact image sensor in which configured to perform the scanning of the original line by line in a main scanning direction while the original being transported in a direction perpendicular to the main scanning direction,

wherein the CCD image sensor or the contact image sensor comprises a plurality of output channels, each of the channels provided for generating single-color, single-line data, and

wherein the detecting section detects the abnormality for each of the channels.

26. The image processing apparatus as claimed in claim 24, wherein the scanning unit comprises a CCD image sensor or a contact image sensor in which configured to perform the scanning of the original line by line in a main scanning direction while the original being transported in a direction perpendicular to the main scanning direction,

wherein the CCD image sensor or the contact image sensor is configured to scan the original for each of three primary colors of light, and

wherein the detecting section detects the abnormality for

each of the three primary colors of light.

27. The image processing apparatus as claimed in claim 23 further comprising an image forming section configured to form an image on a recording medium based on the image data generated by the scanning section.

28. The image processing apparatus as claimed in claim 23 further comprising:

a data compressing section configured to compress the image data generated by the scanning section; and

a data sending section configured to send the image data compressed by the data compressing section to another apparatus via a communication line.

29. The image processing apparatus as claimed in claim 28 further comprising:

a data receiving section configured to receive a compressed image data from another apparatus via the communication line;

a data decompressing section configured to decompress the compressed image data received by the data receiving section; and

an image forming section configured to form an image on a recording medium based on the image data decompressed by the data decompressing section.

30. The image processing apparatus as claimed in claim 1 further comprising a scanning section configured to scan an original and generate the image data to be input to the input

section.

31. The image processing apparatus as claimed in claim 30, wherein the scanning section comprises a CCD image sensor or a contact image sensor in which configured to perform the scanning of the original line by line in a main scanning direction while the original being transported in a direction perpendicular to the main scanning direction,

wherein the CCD image sensor or the contact image sensor comprises a plurality of output channels, each of the channels provided for generating single-color, single-line data, and

wherein the detecting section detects the abnormality for each of the channels.

32. The image processing apparatus as claimed in claim 30, wherein the scanning unit comprises a CCD image sensor or a contact image sensor in which configured to perform the scanning of the original line by line in a main scanning direction while the original being transported in a direction perpendicular to the main scanning direction,

wherein the CCD image sensor or the contact image sensor is configured to scan the original for each of three primary colors of light, and

wherein the detecting section detects the abnormality for each of the three primary colors of light.

33. The image processing apparatus as claimed in claim 30 further comprising an image forming section configured to form

an image on a recording medium based on the image data generated by the scanning section.

34. The image processing apparatus as claimed in claim 30 further comprising:

a data compressing section configured to compress the image data generated by the scanning section; and

a data sending section configured to send the image data compressed by the data compressing section to another apparatus via a communication line.

35. The image processing apparatus as claimed in claim 34 further comprising:

a data receiving section configured to receive a compressed image data from another apparatus via the communication line;

a data decompressing section configured to decompress the compressed image data received by the data receiving section; and

an image forming section configured to form an image on a recording medium based on the image data decompressed by the data decompressing section.